December 1970 - January 1971

EMO

U.K. Civil Defence Today
Shelter Planning
Civil Defence in Yugoslavia
U.S.S.R. Civil Defence
- *Mass Destruction Weapons Effects*
- *A National Concern*
- *Shop C.D. Exercise*

Soviet C.D. Better than U.S. C.D.?

CANADA EMERGENCY MEASURES ORGANIZATION

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MINISTER OF NATIONAL DEFENCE

CANADA

MINISTRE DE LA DÉFENSE NATIONALE

Ottawa, Ont.
January 1971.

Mr. C.R. Patterson,
National Coordinator,
Civil Emergency Measures,
Canada Emergency Measures Organization,
Ottawa.

Dear Mr. Patterson:

May I take this opportunity to wish EMO National Digest readers and contributors, provincial municipal and international civil emergency planners and personnel of Canada Emergency Measures Organization all good wishes for the New Year.

Yours sincerely,

Donald S. Macdonald

Donald S. Macdonald,
Minister.

CIVIL DEFENCE TODAY

Some Thoughts and Reflections

by
*Wing Commander Sir John Hodsoll, CB**

I think it is quite time that the whole basis on which Civil Defence rests today, was subject to a critical study.

What have we got? A number of places earmarked as H.Q. at various levels, mostly unprotected, with little if any equipment, and few trained personnel to man them. They appear to be conceived as operating in a vacuum. And the idea that there will be at least a month's warning during which this non-existent force can be conjured up out of the blue and turned into a viable and efficient service makes no sense at all to anyone with any knowledge and practical experience.

First of all, what are the risks this Country might have to face? Clearly nuclear attack is a possibility; and the risk will obviously increase when America starts to pull out of Europe. But isn't there also the risk of conventional war with the highly sophisticated weapons which are available today? And can C.W. and B.W. be ruled out of account?

I believe that the use of B.W. is unlikely, because of the difficulty of control; but C.W. is another story.

But supposing a conventional war did start in Europe, is there any guarantee that we should escape bombing? Don't we rely on urgent troop and other movements to make up our NATO strength, which is well below establishment? And might not action be taken to try and disorganise and stop such action by bombing or missile attack?

We depend utterly on keeping open our sea lanes, ports and transport systems. Might not an attempt be made to blockade us again, not only by sinking our shipping, but destroying also the ports and vital distribution links in the chain in this Country?

ABOUT THE AUTHOR

Wing Commander Sir John Hodsoll, C.B., was formerly Director General of Civil Defence in the United Kingdom, and head of Civil Defence in NATO. Sir John's experience in civil defence goes back to 1922 when he was appointed secretary of the United Kingdom's Government Committee on Air Raid Precautions. After roughly 40 years' experience in civil defence he is now living in retirement.

Of particular interest to Canadians is the fact that on many occasions from 1949 to 1958 he acted as adviser to Canadian authorities, and to some extent was instrumental in the founding of the Canadian Civil Defence College, now the Canadian Emergency Measures College. His article "Reflections on Civil Defence and Survival" was first published in serial form in five editions between April and December 1966.

This may be thought a far fetched picture. I hope it is; but let us be under no illusions that it could happen. And to visualise possibilities doesn't turn them into probalities. It is just common sense.

Secondly, what do we need to try and combat the risks I have just outlined?

The idea of having a number of command posts — rallying points — is sensible against nuclear attack, provided such posts exist, are protected, can be manned by well trained personnel at short notice and can communicate with each other. The idea that all personnel can be found from Local Authority staffs is an attempt to find an easy paper solution and avoid the bother of volunteers. The question of suitability is vital and what percentage of the staffs in question will pass this test and be willing to make themselves available? No reflection on these staffs is intended; it is just a perfectly fair question.

But supposing we don't have nuclear attack, but conventional; and supposing we don't get much warning, what is going to happen? And even if the 3 or 4 weeks were available, how certain can we be that any government would authorise all the overt preparations necessary? Apart from the fact that as things are at present, 4 weeks are of little use, will any government authorise any overt action until the last minute? All history tells us they will do no such thing. The old old story of too little, too late.

A number of command posts operating — or trying to operate — in a vacuum is clearly not the answer. There must be a properly organised force, well trained and prepared for peace and war.

What problems will this force have to face? Either widespread destruction or heavy destruction in selected areas, such as ports. The same problems will arise; fire fighting, rescue, first aid, emergency hospitals, emergency housing and so on. Communications will be vital.

What plans exist for the maintenance of Government? How are the HQs to be fed with the information which will be vital if control of the situation is to be regained? And above all, what are the surviving public to do? Who is to rally them, lead them, succour them and minister to their needs, so that they can all be organised for the fight back?

Let us be quite clear on this point. The organisation must have one object in view — to turn chaos into order and order into victory.

We can be quite sure of one thing. The moment a crisis arises we shall be inundated with volunteers — at least I hope so if the country remains true to itself despite all the outward signs to the contrary — and unless there is a strong, well trained and well organised nucleus, with clear plans as to what to so with these volunteers, they will be frustrated and in grave danger of becoming defeatist or taking some ill considered action which might not help at all. They could be easy meat for subversive propaganda, which could be cleverly disguised.

I believe that well trained mobile reserve is essential. It should be capable of rapid mobilisation and have war stations away from main target areas.

I also think that Regional HQ should be restored; but should have a war emergency HQ, again away from main target areas. Such HQ can, under normal conditions, be on a care and maintenance basis, provided they are opened up and exercised from time to time. But these regions must be prepared, as in the last war, to act as the government of their areas. It seems to have been quite forgotten that we were ready in the war for regions to be cut off from the central government and have to act on their own. It is important that all these arrangements should be re-examined and plans, based on the necessary revisions not only drawn up, but such essential action taken in peace time as will enable the change from peace to war to be smoothly and swiftly accomplished. This can only be done if personnel are earmarked and trained for their jobs, the equipment is there or readily available and adequate means of communication are assured.

If the attach is nuclear and on our main and obvious target areas, then the fight back must be from the villages, small county towns and rural areas. And if this is to succeed there must be leadership; there must be rallying points and there must be a sharing of surviving resources. To try and rouse enthusiasm for such a scheme in peace time is unlikely to succeed. But leaders can be selected and trained and they can go quietly about their work and compile their own war books of what they would do, in the necessary order of priority. They can ask themselves how their resistance cell could be fed and what it would do.

But supposing the enemy's object was blockade and aimed at the destruction of our major ports and vital communication centres? As well as denying us the use of our major shipping routes. Have these problems been considered? Could we somehow get such supplies as did get through, brought ashere and distributed? What plans exist to deal with the population surviving from the main port areas? The old problems would be there; and the need for leadership, trained volunteers, equipment, transport and communications would be just as vital as always.

Are we trying to get the hams into any organisation? Or are the old Whitehall prejudices still blocking their use. And what about the flying and gliding Clubs? Might not they have a vital role to play in any situation?

These are random thoughts; but I believe they deal with situations which ought to be faced and the problems they throw up critically examined. And it is as well to remember that attack in the future is likely to be far more accurate and destructive than anything we have experienced, if conventional methods were used. If nuclear, we know what we might have to face.

It is fashionable to regard any thought of war as almost immoral; and any preparations must be covered up under a screen of natural disasters. But preparations for war cover natural disasters; and the possibilities of the latter should most certainly be studied and plans made.

But for goodness sake, don't let's be afraid of making preparations to defend ourselves. If we don't nobody else will. It is a right and proper thing to do and is far more likely to fend off what no sane person wants; than allowing ourselves to be wide open to blackmail. It is not immoral, but common sense; and CDOs can do a great service to their authority and their country by giving practical thought to these matters; and encouraging any volunteer movement in their area, which could provide a most vital trained nucleus in an emergency▲

SHELTER PLANNING

Notes on a paper given by Dr. J. McAulay, D.Sc., at the Society's Conference on 13th November, 1969.

Reprinted from Industrial Civil Defence Review
Volume 18 January-March 1970 Number 1

Introduction

When considering shelter against fallout it is as well, first of all, to remember some relevant basic facts regarding the effects of fallout. The most important of these facts are as follows:—

- Within fallout intensity contours of Civil Defence concern, the fallout particles will be predominantly of the size range 75 microns to 2 mms and fused or semi-fused. Thus they will sink in water and except for some very small particles the radio-active matter in them will not be soluble in water.
- There is no inhalation hazard from such large particles; they might be swallowed, but they would not get into the respiratory tract.
- There is no significant ingestion hazard from fall-out unless you make a meal of it. Any fallout that gets into the mouth is spat out or it passes through the gastro-intestinal tract in about 30 hours, and the intestines have a large recovery capacity.
- When regarding fallout as a dust, it should be remembered that the effect of a small quantity which can be blown through the edge or bottom of a close door or window is insignificant compared with that from the vast quantity on the ground outside and around the house. This small quantity can be swept up and disposed of. Therefore the really serious problem with which one need be concerned is the environmental gamma radiation from a wide area of fallout and this leads to a consideration of protective factors of houses and buildings.

Protective Factors

Ordinary detached and semi-detached houses with and 11" brick cavity wall, have a Protective Factor of between 10 and 12 without any additional protective constructional work being done on them. Some improvement in this Protective Factor can be effected by placing heavy bookcases, furniture, etc., in front of windows, particularly in front of the windows of that room selected as the refuge room. In trying to improve the protection in this way an effective P.F. of at least 15 should be aimed at. This could be achieved in the actual event of danger from fallout by lying below the sill level of the window for the first six hours or so.

One sometimes reads in both official and unofficial literature that the average detached or semi-detached house has a Protective Factor of 40. This statement is based on the assumptions that the ground floor windows, at least, are blocked out completely to the same thickness as the wall and that a core shelter has been built with sandbags in the refuge room, whilst other similar additional protective measures have been made in doorways leading out of the house. Of course one should aim to attain this P.F. of 40 in this way if one can possibly do it.

People living in densely built-up areas in back-to-back houses or blocks of flats and tenements have a better Protective Factor than those living in suburban detached and semi-detached houses. But those living in bungalows, prefabricated houses and caravans have a much lower Protective Factor; in general considerably less than 10. Before January, 1968, Home Office policy planning regarding this latter section of the community was that people living in such lightly constructed dwellings should go to communal shelters in the event of danger from fallout.

The selection and allocation of Communal Shelter should be the responsibility of Local Authorities.

The Heat Problem

After a nuclear attack it is likely that there would be a failure in the supply of electrical power, gas and water, as well as many other shortages. In crowded shelters this prospect raises many questions; will people freeze or will they stew in heat or suffocate from an accumulation of CO_2 and lack of oxygen? Therefore in planning to shelter people, one is faced with the problem of deciding how many occupants should be allocated to any given shelter.

In the first place let us consider the effects of body heat generation by the occupants of a shelter. The following table shows the heat output of an average man at various levels of activity.

Heat Output Average Man

Activity	BTU/Hr	Oxy. Cft/Hr	CO_2 Cft/Hr	Breathing Rate
Prone	300	0.6	0.5	15 C.ft/Hr.
Sedentary	400	0.8	0.67	20
Strolling	600	1.2	1.0	30
Standing	1000	2.0	1.67	50
Heavy work	1500	3.0	2.5	75

Also, the moisture output, evaporated from the skin and exhaled in the breath of each shelter occupant, wil rise with the temperature of the environment, e.g.:

Up to 1/10 lb. per hr. for temperatures up to 75° Farenheit.

Up to ½ lb. per hr. for temperatures up to 85° Farenheit.

Above 85° Farenheit, in still moisture-saturated air, heavy sweating starts with a much larger moisture output, which must of course be replaced by larger quantities of drinking water. The output of sweat can exceed 1 lb. per hour.

The overall conclusion from all these considerations is simple; the less physical activity when in shelter the better. The fact that heat can be a real problem is further emphasized when one remembers that eight sitting people generate between them about 1 killowatt of heat, which is equivalent to that of the average electric fire-bar. The less the activity of shelter occupants the less heat is generated, the less oxygen is needed, the less carbon dioxide is given out and the less need for ventilation. However, although heat will be a problem, particularly in tropical and semi-tropical climates, in the U.K. such high temperatures rarely prevail more than a few hours and it is usually much less than 85°F at night.

One must also consider the effect of the ground as a heat sink; that is, the transmission of heat through the floor to the ground and walls, in particular in semi-sunk or underground shelters. One must consider the effects of depth of the earth around shelter walls on mean air temperatures. A slide was exhibited of mean monthly temperatures in an American city with a climate not too different from that in the U.K. For July and August the monthly average peak air temperatures above ground of about 75°F was reduced in the shelter to 65°F at 6ft. depth and to 55°F at 10ft. depth. Also, a peak low was 8°F higher at 6ft. depth and 18°F higher at 10ft. depth. So one can conclude that an earth backed wall and/or concrete floor laid on earth smooths out the temperature extremes very much. For example, it was found that after three days heavy frost, the temperature outside a Royal Observer Corps Post was 26°F whilst inside it was 46°F.

Ventilation

We must now consider the worst possible case — it a shelter were **hermetically sealed.**

In a sedentary posture the endurance is governed by the consumption of oxygen (at a rate of up to 0.85 cubic ft. per hour) and by the exhalation of carbon-dioxide (up to 0.72 cubic ft. per hour). The following table shows the endurance in **hermetically sealed spaces** with different amounts of free space per person, up to the time when the carbon dioxide in the air reaches 2.5% and 3.5%.

Free Vol/person cub. ft.	Endurance to	
	2.5% CO_2	3.5% CO_2
50	1¾ hrs	2¾ hrs
100 & pro rata	3¾ hrs	4¾ hrs
250	8¾ hrs	11¾ hrs

2.5% CO_2 is the threshold for the risk of producing some carbon monoxide in a flame. The level of 2.5% CO_2 should not be exceeded where naked flame lights are used or smoking is permitted in a shelter occupied for a prolonged period; in practice this means no flame lights and no smoking in a shelter with very restricted ventilation. Under emergency conditions reasonably healthy people (i.e. those without respiratory illnesses) could tolerate a build-up of CO_2 to 3.5% in an overcrowded refuge room in a building, for six hours or perhaps longer when, as a result of the rapid fall-out decay, the occupants could safely spread into other less protected parts of the building. However, real structures are not hermetically sealed unless specially designed to be so: all have some air leakage (natural ventilation) and what is important is the degree of compartmentation within the structure and the actual air supply to each compartment. Since most houses and buildings have some natural ventilation, people using them as a shelter will get some air.

However, highly compartmented concrete underground shelters or basement Control Headquarters will need forced ventilation to provide an adequate air supply to all compartments, Since it is likely that the mains electric power will not be functioning after a nuclear attack an emergency power plant (diesel-electric) will be needed in these controls to supply light, communication and ventilation facilities. Given these conditions one can pack as many people into a shelter as necessary, using multi-tiered bunks for sleeping. Another slide was shown illustrating a U.S. magazine-shed type underground shelter with four-tier bunks and about 100 c.ft. per person of space.

In shelter or control headquarters with emergency power plant and forced ventilation it will be necessary to remove heavy fallout from incoming air. To avoid the risk of blocking filters (and the hazardous job of changing them) it would be advisable to shut down the fresh air intake and to go over to internal air circulation while heavy fallout is coming down. As this would mean running the power plant continuously it must be located separately from the main shelter and have its own air supply and separate exhaust. A great deal of air may be needed also for engine cooling. If the emergency power plant is a modern set it will not need regular attention, so there is no need for an air filter for the engine room air unless the switchgear is inside the engine room so that someone has frequently to go into it. In that case it would be best to have an engine room air intake with a filter drawing

air from a buffer room with baffles into which air is drawn through an external intake facing downwards.

Turning now to consideration of shelters in which natural ventilation can be arranged, by leaving some doors or windows open in the building, these are likely to be found mostly in homes and communal shelters in existing buildings and very probably in many sections of industry and commerce. Since eight people generate 1 kilowatt there will be a thermal upward air current in a crowded shelter if there is at least one low level air inlet (an open window or door to the outside or to a stairway) and one air outlet at a higher level. Experiments were carried out in the completely underground basement of an old Fire Brigade Station in Twickenham, which most people would consider to be inadequately ventilated for use as a shelter. Real people took part in the experiments and others were simulated by using electric fires and releasing carbon dioxide from cylinders; the equivalent of a total of 30 people were contained within a capacity of 3,500 cubic ft., giving 117 cubic ft. per person. The shelter had thick walls and a narrow stairway leading down from a closed corridor in the centre of the building. Outside there was a pavement with a grill above a recess into which a shelter window used to open: this window was blocked up except for a 3" gap at the top. It was intended to carry out the experiments at a time when a period of dead calm could be expected; the Meteorological Office supplied the necessary forecast. The result of five days' work under these conditions were of considerable interest. At first there was a period of 18 hours with variable and high winds: the result was that in this naturally ventilated shelter there were two to six air changes per hour (i.e. fresh air replaced the shelter air every 10 to 30 minutes) during which the carbon dioxide in the air in the shelter remained around 0.1%. The wind dropped over the next 12 hours and this was followed by some six hours of dead calm. There was no external air movement as indicated by sensitive anenometers on the pavement and near the roof. The carbon dioxide in the air in the shelter increased rapidly to about 0.4% and flattened out but never exceeded 0.5%.

A theoretical study showed that in a shelter at this loading with only half an air change per hour the carbon dioxide maximum would not exceed 1.3%. This represents normal room with windows and doors closed but not with cracks around windows artificially sealed; with natural ventilation rates of one or two air changes per hour the carbon dioxide maxima would be 0.5% and 1.0% respectively.

There are, of course, many other considerations to be borne in mind when planning the design and use of a communal shelter and some special points are listed below:—

- **Smoking**
  Occupants, as far as possible, should apply a voluntary restriction on smoking but one cannot ban smoking if this can be done near a foul air outlet.
- **Alcohol**
  The drinking of alcohol should, to say the least, be discouraged. It causes dehydration of the body and thus an increase in the consumption of liquid when there may already be a drinking water shortage. Unless some restriction is placed on the consumption of alcohol, it can also indirectly cause considerable problems of morale and discipline.
- **Pets**
  These should be strictly forbidden in all communal shelters.
- **Tools**
  Simple tools for all purposes should be kept in a shelter; to give examples: Torches and spare batteries, hammer and nails, pliers, saw, pick-axe, shovel, rope, cord, string, (and very important) tin openers — that will work!

Shelter Planning Suggestions for Local Authorities

Remember that most people in homes should be able to achieve a Protective Factor of at least 15. Those who do not have such a Protective Factor should have a P.F. of a least 30 in a communal shelter and they should be within 20 minutes walking distance of it. The shelter spaces within the communal shelter should, of course, be allocated before attack. Those allocated to the shelter should be asked to go there during the political emergency prior to the cutbreak of war. If this is not possible or has not been done they should be advised to go there immediately the black warning is given and go as fast as possible. After a red warning has been given one should have all personal essentials needed for the shelter ready and to hand for quick movement on a black warning.

It was hoped that Local Authorities would be able to carry out a survey of possible surface and basement shelters in existing buildings. Some headings to be considered regarding these communal shelters can be briefly listed as follows:—

- **Occupancy**
  Provision should be made for staying in shelters for at least five days. In every heavy fallout shelters it may be necessary to stay longer: and if so higher Civil Defence Controls would have to

(*continued on page 12*) **SHELTER**

THE ROLE OF CIVIL DEFENCE – YUGOSLAVIA

Reprinted from International Civil Defence Bulletin—Geneva, Switzerland

In conformity with the basic constitutional provisions on national defence, which is a component part of the whole system of self-management, the National Defence Act, passed in February 1969, defines national defence as "a unified system of organization and preparation of socio-political communities work and other organizations, and citizens for the defence of the country and for work under war conditions, or rather, for their participation in armed combat and other forms of resistance, and in the protection and rescue of life and property from war destruction". The new National Defence Act has, accordingly, made Civil Defence a part of the integral system of national defence, and has made socio-political, work and other organizations, responsible for the organization, preparation and execution of measures for the protection and rescue of life and property from war destruction.

The organization, preparation and execution of Civil Defence measures fall entirely under the jurisdiction of the National Defence Administration and its agencies operating in socio-political communities at all levels.*

Organization and tasks of Civil Defence

Civil Defence has been organized into a unified system operating at commune level. Communes are responsible for the entire organization of Civil Defence on their territories. They set up Civil Defence units in localities, residential and other buildings; take various protective measures, such as: construction of shelters, organization and execution of evacuation, preparation and implementation of measures against nuclear, chemical, and biological warfare, provision of equipment for Civil Defence units in local communities and localities, etc.

Although they are in principle fully independent in carrying out Civil Defence measures on their territories, the communes are nevertheless bound to act in conformity with the general policy and conception laid down by the Federation, Republics and Autonomous Provinces.

According to the National Defence Act, Civil Defence bodies are primarily responsible for the protection and rescue of life and property from war destruction. In addition, the National Defense Act provides for the mandatory participation of Civil Defence units (and territorial defence units) in the protection and rescue of life and property in the event of catastrophes caused by fire, flood, explosion, earthquake, traffic and other accidents. The National Defence Act furthermore provides that in case of war territorial defence units *must*, in addition to their regular duties (armed combat), take part in the protection and rescue of life and property from war destruction, if and when the combat situation allows it.

This broadly conceived organisation of Civil Defence, which in a certain way entails the participation of all factors of society—from individual citizens to the federal government—is the logical reflection of the need to ensure adequate protection corresponding to the level of danger at any given moment. A modern war, be it of large or limited proportions, and regardless of whether conventional weapons or modern means of mass destruction were involved, would claim much greater losses of life and property than any other war to date. Protective Civil Defence measures, which would be needed for almost all human activities, must be the broader the greater the danger that threatens a definite activity. Since war damage is the most serious source of danger that may threaten the society, it is natural that protective measures under war conditions must be organized as efficiently as possible.

All Civil Defence measures and actions are basically of a self-protective character. Under the Yugoslav system of total national defence (*), self-defence is the main component of Civil Defence and the most widespread form of protection and rescue of life and property from war destruction. It should be achieved through well organized measures for preventing casualties, through quick self-help and provision of aid to others through the rescue of trapped persons, the localization and putting out of fires, the nuclear, chemical and biological control and decontamination of the territory, the prevention of panic, and the maintenance of public order and discipline.

Civil Defence has a self-defensive character not only in work organizations, residential buildings and insti-

(*) The development of Civil Defence since the war has gone through several stages. The Anti-Aircraft Defence Decree of December 1948 laid down foundations for anti-aircraft defence (AAD), which was directed by the Ministry of Interior. Service in Anti-Aircraft Defence was obligatory for all persons aged from 16 to 55 years, with the exception of soldiers, police officers, mothers with small children, and pregnant women.

Under the 1955 Civil Defence Act, the AAD agency its name into "Civil Defence" and was given new tasks. At the same time citizens' Civil Defence duties were determined with more precision.

In 1962, Civil Defence was removed from the jurisdiction of the Ministry of Interior and placed under the jurisdiction of National Defence agencies. In this way Civil Defence became part of other defence preparations and was incorporated into the system of total national defence.

(*) Throughout this article the term "Total national defence" (Opsta narodna odbrana) is used for what is in Yugoslavia officially called "all-people's national defence". (Translator's note).

tutions, but also in individual localities of a commune and communes themselves. As the basic socio-political community, the commune is responsible for the organization and development of the entire system of Civil Defence in accordance with presumed dangers and its own potentialities, so that any outside intervention, either with the help of territorial defence units or Civil Defence units of another socio-political community should only be needed to complement its own Civil Defence system.

In order to enable Civil Defence agencies to function efficiently and carry out successfully protective and rescue operations, provisions are made for the setting up of Civil Defence units, the preparation and implementation of prescribed protective rescue measures, and for the engagement of territorial defence units and services in protective and rescue operations. In addition, the National Defence Act provides for obligatory services in Civil Defence and for mandatory material contributions for Civil Defence requirements.

Civil Defence units

Within the framework of preparations for total national defence, Civil Defence units are primarily called upon to organize and ensure the protection and rescue of life and property from war destruction. They are consequently adequately organized and equipped for the purpose.

In peace time, Civil Defence units are formed, equipped and trained in accordance with the Civil Defence plans laid down by socio-political communities, work organizations and other institutions; they are mobilized in the event of immediate danger of war and in the event of war. In peace time they are mobilized whenever it is necessary to protect and rescue life and property from natural catastrophes.

Civil Defence units are mandatorily set up in work organizations and local communities. commune Assemblies may also decide to set up such units in residential and other buildings and in localities (parts of large localities or in localities as a whole—towns). This has in fact been the practice so far. The units are formed and directed by the managing bodies of the institutions in which they are set up, and where there are no such bodies, this is the responsibility of the competent agency of the commune Assembly.

According to their duties and organizational structure, there are general—and special-purpose Civil Defence units. The former are treated as self-defence forces while the latter serve the needs of large work organizations and localities as a whole and even of the commune's entire territory.

In residential and other buildings, in the smaller work organizations and other institutions, as well as in small localities general-purpose units are formed, i.e. units responsible for the protection of the work organization, building or locality by which they are set up. They are usually of a mixed composition (involving several specialities) and are trained for emergency operations on the site of an accident, such as rescue from endangered buildings or localities, provision of first aid in the course of rescue operations, localization and putting out of small fires, decontamination of uninjured persons and livestock, and small-scale decontamination of facilities and equipment. Self-defence units are organized into teams, sections, platoons and even battalions, if necessary.

In large work organizations, local communities and localities (cities), special-purpose units are formed to carry out large-scale protective and rescue operations. They are usually specialist units but, if necessary, may also be fused into units of mixed composition (for example, specialist units for technical protection, nuclear, chemical and biological warfare control, first aid, etc. may make up a joint unit—battalion, detachment), in order to make it easier to direct action on the site of rescue operations.

The following kinds of units may be formed to carry out protective and rescue operations and take other measures to alleviate the consequences of moder warfare: technical, medical, nuclear-chemical-biological warfare control (NCB units), fire-fighting, veterinary, clearance, and public order and security units. They may be organized into teams, sections, platoons, battalions and even larger formations if necessary.

Technical units are responsible for the technical side of protective and rescue operations; they are formed from the personnel and provided with the equipment building, design, public utility and related organizations. Their duties include: rescue of persons from debris, damaged or flooded buildings and other structures; clearing debris for rescue purposes and organization of transport: demolition of damaged buildings and structures for safety purposes; and search for and disposal of unexploded bombs and mines. In urgent cases, technical units may be charged with the construction of improvised shelters and protective trenches for people and property. If necessary, they may also be assigned other tasks, such as making firebreaks, carry out decontamination of the soil, securing water supply, etc.

Medical units are made up of trained personnel, and provided with the medical equipment and supplies of, health agencies; they also make use of the services of Civil Defence first-aid workers. Their principal duty is to render first-aid on the spot in the course of rescue and to ensure conveyance of casualties and the sick to a medical institution for further treatment. They also help with hygienic and anti-epidemic measures and take part in food and water control, clearance operations, decontamination of casualties, and similar tasks.

NCB units are formed from the personnel of and provided with equipment of, research institutes, laboratories, the hydrometeorological service, relevant public utilities and other work organizations. They are

primarily responsible for the detection of radioactive fall-out and of dangerous chemical and biological substances (their kind, intensity and degree of contamination), and for the dosimetric controlof the population and decontamination of the uninjured, technical equipment and facilities. They are either reconnaissance sections (responsible for detection, dosimetry and identification) or decontamination sections specialized according to the object of decontamination. If necessary, they can also be called upon to take part in fighting small fires and to help medical and veterinary units with hygienic and anti-epidemiological measures and clearance operations.

Fire-fighting units are formed from professional and voluntary fire-fighting organizations, and are assisted by Civil Defence personnel. Their principal duty is the localization and putting out of fires, but they also take part in preventive, organizational and technical fire-fighting measures and in the rescue of people and property from burning buildings and other structures. They can, in addition, be engaged for other duties, such as the decontamination of various facilities, water supply, pumping out water from flooded facilities, etc.

Veterinary units are chiefly formed, if necessary, in agricultural and livestock-raising areas from the staff of veterinary service and from Civil Defence personnel, their primary duty being the treatment and decontamination of injured or sick animals. In addition, they take part in the organization and implementation of preventive veterinary measures, protection and control of animal feed and of animal origin, and in clearance operations.

Clearance units are made up of, and outfitted with the equipment of public utility organizations and Civil Defence personnel. They are primarily responsible for clearance operations and the alleviation of war damage, and, if necessary, of demolition in peace time. Their principal duties are to search for, keep a record of, and bury the bodies of, those killed, to collect and bury killed animals and to search for, annihilate or remove all kinds of harmful waste that may endanger the life and health of people and animals.

Public order and security units are formed (by Commune Assemblies) for the purpose of maintaining public order and security during property—and life-saving operations. They are also in charge of the control-protective service, see to the safety of buildings and structures liable to collapse, and perform various other functions.

Civil Defence units of work and other organizations are recruited from the staff employed in them. Other Civil Defence recruits—in residential buildings, local communities and localities—are drawn according to the so-called territorial principle, that is, from persons living in these houses and areas. One and the same Civil Defence recruit can only be assigned to one such unit. Soldiers who have temporarily no assigment in the army can also be assigned to Civil Defence units, but the moment they get their army assignment they cease to be Civil Defence recruits.

The equipping of Civil Defence units is in principle the responsibility of the organizations by which and for whose protection they are formed. Thus, work and other organizations provide equipment for their own Civil Defence units, units in residential buildings are equipped by house-management enterprises, while the Communes supply equipment for Civil Defence units in local communities and localities if the latter do not have sufficient resources for the purposes. This primarily relates to the equipping of special-purpose units intended exclusively for protective and rescue operations in war time, and which do not operate in peace time for lack of equipment. Otherwise the main source of their supplies is regular peace-time equipment (vehicles, tools, machines, etc.) supplied as Civil Defence contributions.

Protective and Rescue operations

Protective and rescue operations play a special role in the system of Civil Defence. They are carried out with a view to preventing, alleviating and making good the consequences of war operations and other actions, and have primarily a preventive character, since the protection and rescue of life and property can only be successful if the necessary measures are adequately and timely organized and carried out.

Obligatory protective and rescue measures include: town planning measures, provision of shelters for the population and property, evacuation, welfare of endangered persons and casualties, enforcement of black-out and camouflage measures, taking protective measures against nuclear, chemical and biological warfare, protection from collapse of buildings, flood, fire and explosion, rendering medical and veterinary first aid, clearing up the terrain from war damage, and maintenance of order and security.

Town planning measures are of an exclusively preventive character and are implementated in the stage of spatial planning and the construction of certain facilities, localities and wider regions within the framework of current town planning activities.

Sheltering of persons and property. In the event of danger of war steps must be taken to provide shelter and other suitable premises or sites in the immediate vicinity of the endangered area. This is one of the most important measures in the system of protective and rescue operations since, according to the conception of total national defence, a large proportion of the population would remain in their localities to carry out their various obligations, primarily in order to put up active resistance to the aggressor.

The obligations entailed by this protective measure are precisely regulated, from the construction of shelters in new buildings, the adaptation of cellars and other suitable premises for the purpose, and the construction of public shelters and trenches to the eva-

cuation of the population and property from the endangered premises or localities.

Shelters must meet the requirements imposed by modern warfare and must be built according to uniform technical standards. The construction of new shelters is financed from contributions paid by investors in new business and residential buildings and from part of the rent. The amount to be paid is fixed by the Commune Assemblies in conformity with relevant republican legislation.

Evacuation of the population and property is planned in peace time, to be carried into effect in war time or in the event of direct danger of war. Evacuation is carried out from large localities (cities) and other endangered areas to less endangered regions offering greater safety.

Evacuation is provided for individuals, government agencies, work and other organizations, as laid down by the evacuation plan. Since the conception of total national defence provides for the defence of localities and active combat on temporarily occupied territory as well, priority in evacuation is given to children, mothers with small children, the sick and the aged, followed by government agencies and work organizations whose proper functioning demands adequate conditions, as well as to indispensable material goods, including objects of cultural and historical value. Evacuation of the population is planned by the Commune Assemblies, and evacuation of government agencies, work organizations and material goods by the competent bodies of management. Republican and Provincial National Defence Headquarters are in charge of the actual evacuation.

Relief is the responsibility of the Commune Assemblies. In this work they are assisted by individuals, work and other organizations, especially health institutions, catering establishments, public utilities, social welfare organizations, the Yugoslav Red Cross and other humanitarian organizations which can contribute to the quick provision of emergency relief. These measures include the provision of accomodation, food, clothes, footwear, bedding, medicines and other necessities for homeless and destitute persons.

Black-out and camouflage measures in time of war, and, if necessary, in the event of immediate danger of war, are carried out in localities, industrial, commercial and other premises, according to plans laid down by the Commune Assemblies. What structures and facilities should be camouflaged is determined by the Commune Assemblies, while the actual camouflage work is the responsibility of the work organization to which the objects in question belong. The black-out of public areas, streets, squares and similar places is the responsibility of the agencies responsible for public lighting. The black-out of residential and other buildings and of means of transportation is the responsibility of the tenants and owners or drivers. They must sustain all the costs involved.

Nuclear-chemical-biological protection (NCB). The objective of NCB measures is to prevent, alleviate and overcome the effects of radioactive fall-out and of chemical and biological warfare on persons, animals, plants and material goods.

One of the basic components of NCB protection and the precondition for taking adequate NCB measures is the nuclear, chemical and biological control of the territory. For this purpose a unified system of control has been organized for the country as a whole which, in addition to Civil Defence, is also made use of by other national defence agencies. NCB control is aimed at detecting and anticipating the dangers that might threaten individual regions, whereof the population is informed through the information and warning service.

NCB measures are carried out by research institutions, laboratories, the hydrometeorological service and other specialized agencies and work organizations which have adequate skilled staff and technical facilities for detecting and determining the level of danger of, and the removal of the consequences of, NCB contamination.

All individuals are duty-bound to take measures of personal, and all government agencies, work and other organizations of collective NCB protection. Collective NCB protection measures are mandatory for all work organizations, government agencies and other institutions. The obligatory minimum of personal and collective NCB protection for citizens, government agencies, work and other organizations is fixed by the Federal Executive Council.

Relief in case of the collapse of buildings, flood, fire and explosion means the timely carrying out of adequate, well organized preventive measures in case of the collapse of residential and other buildings, the rescue of trapped persons, and flood-control measures in flood-threatened areas.

Rescue of persons and property from collapsing, burning or flooded buildings and structures is the responsibility of building, fire-fighting, mining, public utility, transport and other work organizations possessing adequate equipment and expert staff, all this being determined by Commune Civil Defence plans. It is, however, considered that a situation may arise where these forces will not be sufficient. Provision is therefore made for training all able-bodied persons for adequate preventive measures and for taking part in the rescue of endangered persons and property. In this connection special attention is paid by Communes to a closer cooperation between professional and voluntary Fire Services and to the further improvement of a unified war-time Fire Service.

Protection from explosion, which mainly relates to disposal of undetonated projectiles, is organized by the competent agencies of the Commune Assemblies, while the actual work is carried out by specially trained personnel.

Medical first aid, veterinary first aid and clearance operations. The use of modern means of mass destruc-

tion may claim large numbers of casualties, both among people and livestock, and may trigger the onset of various epidemics. Regular health and veterinary services would not be able to deal with all casualties and endangered persons.

Because of this, apart from health institutions, various other specialized agencies, in the first place organizations of the Yugoslav Red Cross, are called upon to take medical measures. A great role here is also played by individuals specially trained for the purpose. First aid operations include the location of casualties, the rendering of first aid in the course of rescue operations, and the conveyance of casualties to hospitals for further medical treatment.

The provision of first aid to casualties or contaminated livestock is organized by the Communes. The actual measures are carried out by veterinary institutions, agricultural and other work organizations, and by the owners of animals.

Communes are also responsible for the organizations of clearance operations, in which they are assisted by health, veterinary and hygiene-epidemiological institutions and public utility enterprises.

Maintenance of public order and security. One of the essential Civil Defence measures, which should in fact ensure the implementation of the planned protective and rescue measures and the removal of the consequences of war operations or of natural catastrophes, is the maintenance of public order and security in affected areas. These measures are organized by the Commune Assemblies and are carried out by the agencies, organizations and citizens of the affected territory, as provided for by Commune Civil Defence plans.

This report of the role assigned to Civil Defence in Yugoslavia's total National Defence has been taken from the quarterly periodical "Yugoslav Survey" published by the Secretariat for Information of the Federal Executive Council, Mose Pijade Street 8, Belgrad.

This publication, the original edition of which appears monthly in Serbo-Croat under the title "Jugoslovenski Pregled", regularly provides information on the political, economic, social and cultural life of Yugoslavia, which originate from official sources. Yugoslavian experts and specialists in the various fields covered participate in the preparation of the articles, reports and studies.

Thus, the report on Civil Defence was prepared by Messrs. Zdravko Buzadzic and Branko Jovanovic, heads of services in the Federal Department for Civil Defence of the Secretariat of State for National Defence.

The many tasks assigned to Civil Defence agencies in the event of disaster of any type, including armed conflict, as regards prevention, protection, rescue, relief and rehabilitation, call initially for legal basis making it possible to define these tasks and to clarify the relationships with other bodies which may have to participate in the event of a disaster or war. It is therefore useful to make known, whenever the occasion arises, any new legislation relating to the activities and precise role of Civil Defence within the National Defence programme.

Participation of Territorial defence units and services in Civil Defence

Under the National Defence Act, the reconnaissance, intelligence and warning services are treated as special Territorial Defence Units. They are organized by socio-political communities but can also be set up by work organizations and local communities. Their task is to detect and follow war or potential war operations, to inform the population and competent institutions thereof, and to take the necessary alarm precautions.

As a special service responsible for the detection, observation and forecast of the hazards of nuclear, chemical and biological warfare, the NCB control service makes part of the reconnaissance and intelligence services and through joint media of communication and warning inform thereon the population and competent institutions, and takes the necessary warning measures.

Within the framework of these services centres for communication, reconnaissance, intelligence and warning, reconnaissance stations and computing-analytical centres are set up by socio-political communities to ensure constant and uninterrupted control of the State's territory and a timely reporting of warning system.

Consequently, these services also operate on behalf of Civil Defence, and normal functioning and the timely informing of Civil Defence agencies are a precondition for Civil Defence measures and actions to be timely and efficiently carried out.

The National Defence Act also provides that in addition to their basic duties—the conduct of war operations—territorial defence units should also take part whenever the combat situation allows it, in the protection and rescue of life and property, especially if Civil Defence units are not able to carry out these tasks efficiently enough.

Obligation to Serve in Civil Defence

Civil Defence obligations include the duty to serve in Civil Defence units and the obligation to take part in the protection and rescue of life and property. This obligation devolves on all Yugoslav citizens aged from 16 to 65 years, with the exception of permanent army personnel, recruits having a war assignment, police forces, pregnant women, women with small children under seven years of age, and persons unfit for the Civil Defence service.

Work organizations and individuals have also a material obligation towards Civil Defence since the bulk of

technical and other material resources for this purpose are provided from their property. On the basis of this obligation material contributions for Civil Defence are due in the event of immediate danger of war, in war time, when there are natural catastrophes, and for Civil Defence exercises in peace time.▲

SHELTER *(continued from page 6)*

consider how to supply essentials for the maintenance of life in such shelter areas.

- **Space**
  The allocation of floor space should be at the rate of at least 15 sq. ft. per head.
- **Water**
  Tanks in buildings should be reserved for drinking only and should be cut off from the toilet. Allow at least two pints but preferably one gallon of drinking water per person per day. Where a communal shelter has been selected as necessary but it has no water supply the occupants should be asked to bring some with them on the day and the local authority should arrange an emergency provision.
- **Food**
  Each occupant should bring his own food supply for at least five days together with all necessary baby foods. A supplement might be supplied by the Local Authority for emergency purposes and for people using the shelter because they are unable to go home or work in premises without adequate shelter. In these terms there is a requirement for a food supplement of about 700 calories per day per head and this should be made up by the provision of biscuits, boiled sweets, etc.
- **Medicines**
  A first-aid kit should be brought by the occupants and family medicines against minor ailments, coughs, colds, diarrhoea, etc., as well as special maintenance drugs such as insulin.
- **Hygiene**
  This problems can be covered by two chemical closets using a stock of plastic liners for solid excreta and two buckets (one set for each sex), for each 25-30 occupants (also toilet rolls).
  Refuse Bags and dustbins (roughly one gallon of crushed refuse will be produced per occupant per day).
- **Lighting**
  One night light for each 50 occupants, lasting eight hours. This should be used under the responsibility of the Shelter Manager because of the fire risk involved.
- **Sleeping**
  If there are no bunks, corrugated sandwiched cardboard has been proved to be effective over a hard floor and central production for this substitute could be arranged. Occupants might bring pillows and blankets if they wished but not mattresses.
- **Communications**
  It was expected that this could be done by subregional broadcasts. Occupants can bring transistor radios, but for the sake of relative peace to all occupants only one should be used at a time and it would be advisable to wrap the others up inside some metal foil as a protection against magnetic field penetration from nuclear flash. Also it might be possible to receive instructions one way by telephone from a C.D. Control▲

MASS DESTRUCTION WEAPONS EFFECTS

by
Major A. Kostyuk
Source: Voyennyye Znaniya, Moscow

In a contemporary war, should the imperialists start one, the civil defense units will have to function under extremely complex conditions while enduring great psychological loads. Experience of past wars indicates that new types of weapons, for which the people were not psychologically prepared, caused confusion and panic, decreasing the moral and fighting spirit of the troops. Victories were won by armies whose soldiers, other conditions being equal, proved to be morally and physically more stable and better prepared psychologically.

In making their plans for the instigation of a new world war directed against the USSR and the entire socialist concord, the imperialists are counting on the fact that the use of weapons of mass destruction will cause a great psychological effect, sowing fear and confusion, and suppressing the moral state of the armies and rear areas.

The misanthropic plans of the instigators of a new world war are counterposed by the Soviet people with their deep trust in the might of the Soviet Army and Navy, in the abilities of the civil defense forces and the entire population of the country to handle the most complex tasks.

The combat qualities of the personnel making up the civil defense units will be determined in many ways by their confidence in the just nature of the war which will have to be waged if the imperialists violate world peace or our independence. Experience of the Great Patriotic War evidences that Soviet fighting men and all Soviet people, firmly convinced of the just nature of the victorious ideas of Marxism-Leninism, even during the most difficult period of the war firmly believed in victory over the enemy and steadily brought this bright hour closer by their military and labor feats. The basis of this success achieved by the Soviet people lies in high political consciousness and loyalty to the Communist Party and the Soviet Government. It is quite clear that the higher the political consciousness of a person the greater the guarantee that even the most unpredictable situations will be unable to confuse him.

The study of mass psychic reactions during natural disasters indicates that they are more pronounced and prevalent in cases when the people are left to themselves. Here is an example. During the 1966 Tashkent earthquake tens of thousands of people were left homeless, many lost most of what they owned, and a difficult situation developed in the city. Still a calm atmosphere was preserved there. This was, first of all, promoted by the fact that the liquidation of the consequences of the earthquake received the attention of the Central Committee of the Communist Party and the Soviet Government. The entire country, all of our people, helped the stricken city. Extensive party political work was also carried out in Tashkent. The population received full information on a timely basis, which prevented the spread of rumors. Everyone who was able took part in socially useful work, which also prevented disorganization and panic. Extensive organizational work and the assistance of party and soviet organs imbued people with confidence in the successful elimination of the consequences of the natural disaster.

Quite an important task in the moral-psychological preparation of unit personnel consists of the development of internal readiness to function in an area hit by a nuclear weapon. Such readiness is usually combined with nervous-psychic stability, the physiological basis of which consists of strength, self-confidence, a state of balance, and mobility of nervous processes. Let us examine this question in somewhat more detail.

When the enemy uses weapons of mass destruction disturbances in the nervous-psychic sphere may occur not only under the effect of the injurious factors of these weapons, but also as a reaction of the personality to the military situation. However, if in the process of psychological preparation emotional and will power stability is developed, then even in extremely dangerous situations it will be possible to maintain coolness and readiness for proper action.

The reverse is also true. In the case of psychologically unprepared persons, because of the disturbance of nervous activity, even the anticipation of a dangerous situation gives rise to a sense of alarm. The higher psychic functions suffer: increased impressionability develops, the attention span narrows, and coordination of motion is disrupted. At the same time there is an acceleration in the pulse and respiration, thirst occurs, along with dryness in the mouth, chills might develop, or, on the contrary, a fever.

Finding themselves in such situations for the second or third time people behave much more calmly, and their psychological reactions are less pronounced. In this manner combat experience consists of not only an active experience, but a familiarization with the nature of experiences that occur in a combat situation. Finally it is an ability to suppress negative emotions. It is not by accident that one of the main positions in the combat training of the troops is the demand that soldiers be taught what is needed at war, under conditions as close as possible to reality.

This position also applies to the civil defense units. Moral-will power qualities, necessary for operations

in a stricken area, are developed in peacetime during day-to-day training.

It is, of course, difficult to create the conditions of a real stricken area at the exercises. It is, however, necessary to strive for a situation where the assignments issued to the teams would be sufficiently complex, so that they would come close to a wartime situation both with regard to deadlines, the energy that must be spent, and with regard to physical and spiritual concentration. Such a task may be resolved by any establishment. Half-hearted training exercises without any special physical and spiritual concentration are not only ineffective, they undermine faith in the advisability of civil defense measures themselves, thereby sometimes bringing harm instead of being beneficial. Resolution of the task of moral-psychological preparation is promoted by measures similar to those discussed in one of the issues of *Voyennyye Znaniya* by S. Shevyakov. He cited as an example one of the exercises which was of interest because of its concrete nature. The participants were faced with the task of evaluating the operational stability of the plant and finding ways of increasing it. The state of affairs in the establishment itself was studied in detail in the course of preparations. As a result of extensive painstaking work the exercise utilized not some abstract figures, but fully realistic data which were checked out a number of times and were therefore convincing. All of this, naturally required considerable expenditures of time and efforts but brought definite benefits. It is specifically in the process of such work that conviction is developed in the necessity for constant perfection of civil defense, and the place and role of each individual in the overall system of measures is determined in defense against weapons of mass destruction.

In speaking about the moral-psychological training of units it is impossible not to stress the role of the commander. As noted by psychiatrists not only fear is contagious. Courage and bravery are also transmitted and induced. A heroic example set by the commander helps to suppress fear and other undesirable reactions inspiring courageous action. The role of such a positive example in civil defense increases more also because in order to carry out rescue operations in an area hit by a nuclear weapon will involve people who in peacetime did not undergo extensive training. They will be able to act correctly and confidently if they have an example to emulate. That is why special demands are made on the training of command personnel.

The nature of behavior in frightening situations and effectiveness and accuracy of actions in the fulfillment of missions will depend in many ways on the stability of habits acquired during training exercises and sessions. Firm, well-trained habits remain in any situation. One of the conditions of good training, and this means moral-psychological stability, consists of the numerous repetition of certain techniques at training exercises and sessions.

Firm habits in the administration of self and mutual aid, an ability to use individual and collective protective equipment, a clear understanding of the rules of behavior and the program of action in different unusual situations, connected with the use of weapons of mass destruction — all of this promotes moral-psychological preparation. A knowledge of the weapons that might be used by the enemy, of course, is also necessary.

General information about weapons of mass destruction which may be used by an aggressor is obtained by the population in the mandatory training program. We would merely like to note that information about the injurious properties of modern weapons must not serve as a goal in itself. Its task is to show the trainees the situation in which they could possibly have to function. It is, of course, necessary to acquaint people with the injurious factors and consequences of the use of these weapons, but the most important part is acquaintance with the means of defense.

It is impossible to underevaluate modern weapons. Such an underevaluation leads to carelessness in peacetime, and in a wartime situation may bring about confusion and panic. It is equally harmful to overevaluate the weapons. This brings about a feeling of hopelessness among the people, promotes passivity and sometimes panic. It must be noted that certain popular scientific publications in past years often erred by such a shortcoming. Entire chapters in the books and brochures were devoted to a description of the pictures of devastation which would occur after the explosion of nuclear devices. Possibilities of defense were mentioned only in passing. Such mistakes must be avoided in training on the subject of "Injurious Effects of Nuclear, Chemical, and Bacteriological Weapons of the Enemy."

As we see moral-psychological preparation constitutes an entire system of political-educational and training measures aimed at the molding of moral-will power qualities and personality features, as well as habits that will permit the unit personnel to function successfully under conditions created by the enemy use of weapons of mass destruction. Even this far from complete examination of the question indicates that moral-psychological preparation is an important link in the combat training of the unit personnel▲

CIVIL DEFENCE – A NATIONAL CONCERN

The following are excerpts from an original article by V. A. Belyavskiy published in Moscow in 1969.

"The CPSU and the Soviet Government devote continuous attention to the matter of raising the defence capability of our state. Along with strengthening the combat might of the Soviet Armed Forces, a great effort is being made in the country to strengthen civil defence, which is required, in case of the imperialists' unleashing a war against the USSR, to ensure the protection of the people and material values from nuclear, chemical, and bacteriological weapons and other means of mass destruction. This brochure deals with the role and tasks of civil defence, its national scope."

"Equipping modern armies with nuclear and other mass-destruction weapons, as well as with powerful means for their delivery to targets (ballistic missiles, bombardment aviation, atomic submarines) has immeasurably increased the threat of attack on the most important industrial and administrative-political centers in the deep rear of a country, where, as is known, enormous numbers of the population live and the basic mass of industrial enterprises and material values is concentrated . . ."

"Nevertheless, under war conditions it is essential to expect the use of mass destruction means, including rocket-nuclear weapons. This, however, does not exclude the use of so-called conventional means of destruction (demolition and incendiary bombs, napalm), which have also undergone marked qualitative changes and constitute an enormous danger, expecially to densely populated areas.

Of course, the century of the greatest scientific-technological revolution witnesses the devising not only of destructive means but also reliable means of protection against them: air defence is being developed and improved, new, most effective means for the protection of people and material values are being developed and introduced, etc.

But the development of offensive weapons usually proceeds at a faster pace than the means and methods of defense are improved. Because of this, if the imperialist forces manage to unleash a new war, we cannot exclude the possibility of the enemy's delivering blows with mass destruction means on urban areas and national economic targets located in the deep rear of the country. That is why modern conditions give rise to the quite complex problems of organizing the protection of the population against mass destruction weapons and ensuring the continous operation of enterprises in wartime . . ."

"But the solution of all defence problems also entails the marked involvement of civil defence, which has been transformed into an all-state, national system. Its measures are directed at ensuring the vital activity of the state in wartime.

It is necessary to point out that we are not the only ones to ascribe great significance to civil defence. In the U.S.A., for example, it is considered a most important defence factor that ensures the survival of the population during a state of emergency. In Great Britain civil defence is one of the armed forces, just like the ground, naval, and air forces. It is held in high esteem in the Federal Republic of Germany (FRG) and other capitalist countries, especially the members of the aggressive military bloc NATO.

A consideration of the role played by civil defence in modern war entails proceeding from those problems that it must solve in wartime. As an all-state and national system, civil defence must ensure the protection of the population, material values, and national economic objects against mass destruction weapons (nuclear, chemical, and bacteriological), against conventional destruction means, as well as do rescue and immediate emergency-repair work in the foci of destruction . . ."

"During the past war, as was pointed out, there was no necessity for implementing protective measures throughout USSR territory. During the Great Patriotic War there was, as we are all aware, a deep rear that was inaccessible to enemy aviation. In modern war there is no such rear. At the very outset of a war, every populated point in the country may be located within the operational area of an enemy-applied mass destruction weapon. And this requires the implementation of protective measures in each urban area, in each rayon and village, and in all enterprises of the country.

It is also necessary to point out that during the last war it was markedly easier to solve the problems of protecting the population and liquidating the consequences of the enemy's blows. But at that time the employed destruction means lacked the destructive properties of modern weapons. Concealing people in trenches, not to speak of more solid underground installations, then sufficed to avert mass losses of people. It was also relatively easy to cope with the matter of liquidating the aftermath of the enemy's bombings of objects and urban areas.

What is now required are stronger protective shelters and cover. Establishing them for the entire population of the country entails the expenditure of enormous means and many years of strenuous labor. Not a single

state, even the most highly developed, can now do this. Because of this, many countries are devoting great attention, in addition to constructing shelters, to dispersing the population, to limiting its concentration in large industrial centers, to implementing measures for the evacuation of the population before the nuclear strikes of the enemy.

As to the rural population, it can be sheltered in production, economic, and residential structures, in simple installations like cellars, basements, trenches; for it will be radioactive clouds that represent the greatest threat to the rural population.

The second group of tasks involves measures directed at seeing to the steady operation of national economic objects during wartime.

There is scarcely anyone who will deny the fact that an enemy's use of mass destruction weapons will interfere with and complicate production activity in the rear of the country unless necessary measures are taken to see to the steady operation of enterprises in wartime.

During the Great Patriotic War the steady operation of national economic enterprises was ensured in part by the evacuation of a substantial number of industrial enterprises to safe areas, beyond the range of the enemy's aviation.

Modern conditions preclude relying on this experience. Enterprises can be subjected to enemy strikes at any place, no matter how far they are located from the front. This gives rise to the complex problem of seeing to the steady operation of national economic objectives in wartime. It can be solved on the basis of implementing a complex of organizational measures in industry, transportation, and other national economic branches. These measures may include a more expedient deployment of industrial enterprises during construction, the timely determination of appropriate work systems under conditions of an enemy attack, the protection of blue- and white-collar workers, etc.

The third, final group of tasks includes measures connected with liquidating the aftermath of an enemy attack with mass destruction weapons—if an enemy dares attack our country. That some of our urban areas and objects may suffer as a result of an enemy's nuclear blows is not excluded. It will then be necessary to undertake in the stricken areas rescue and immediate emergency repair work, at times under conditions of radioactive contamination. It is readily understandable that the doing of this work entails specific civil defence forces (formations), which would quickly go to the stricken area and organize the rescue of people and material values. Such formations, employed in liquidating the aftermath of an attack, will have to be used in shifts, with due regard to the evolved situation in the center of the strikes.

It is possible that civil defence forces will be involved in a struggle against an airborne landing force and diversionary-reconnaissance groups of the enemy, in the liquidation of the aftermath of natural disasters, in the restoration of destroyed roads and bridges, in the erection of crossings across water barriers and in other operations.

Modern war requires skill in solving problems that in the past either did not appear or were solved on a very limited scale. In past wars, for example, solving the problems of protecting foodstuffs, water, and basic necessities was never as urgent. In modern warfare this is of exceptionally major significance. In fact, it is possible to protect people in the face of an enemy's application of nuclear, chemical, and bacteriologic weapons without preserving their lives. This would occur in case people consumed contaminated foods and water, for this would inevitably lead to radioactive poisoning. That is why the protection of foodstuffs, water, animals, and plants has become an important problem, one that civil defence must solve.

When one makes a brief summary of all that has been said about the impact of modern war on training the population for protection against mass destruction weapons and on implementing protective measures in the country, he must say that they have become immeasurably complicated, the volume of related operations has been increased, and their character and content have been changed . . ."

"In our country all measures for protection against modern weapons are implemented in the interests of the Soviet people—the builders of communist society, masters of their Motherland—in the interests of the preservation of material values, in the ensurement of the steady operation of national economic objects. The national character of Soviet civil defence is manifested through the active participation of party, Soviet, and economic organs and the broadest possible strata of the population in its measures. Hence our civil defence is not an isolated, departmental system but an all-state, national concern. Its measures are taken into consideration in national economic plans and implemented by all ministries, agencies, public organizations, and the Soviet people . . ."

"The people's choices—the deputies—render enormous assistance to civil defence organs. They discuss topical problems of civil defence at ispolkom (executive committee) sittings and at their own sessions and actively participate in the verification of the course of blue- and white-collar worker training in measures to protect themselves and material values against mass destruction weapons at enterprises, institutions, organizations, as well as the training of agricultural workers on collective and state farms. They also render practical assistance to raise the organizational and quality level of studies and the propagation of skills in many other enterprises.

At enterprises, institutions, educational establishments and on collective and state farms, responsibility for training with respect to protection against mass destruction weapons devolves on the heads of the aforementioned units. They enjoy a large number of rights and in their daily work rely on the assistance of party and public organizations. This facilitates solving civil

defence problems and enables passive defence measures to be implemented in a more skillful and efficient manner.

Many blue- and white-collar workers, collective farmers, students, and pupils form part of numerous and diversified civil defence formations (detachments, teams, groups) that are set up in establishments and collective and state farms. The mass participation of the toilers and students in civil defence formations is a characteristic feature of Soviet civil defence. . . ."

"And, in fact, civil defence has recently become an object of daily attention on the part not only of the party and state organs but of the broad public as well.

Civil defence problems are systematically considered at bureau meetings and plenary sessions of party gorkoms and raykoms (city and regional committees). Party organs are taking measures directed at raising the readiness level of staffs, services, and formations, rendering assistance to civil defence organs in preparing individual and collective means of defence. Party organizations make a great effort during studies, mobilizing the participants to improve the discharge of their responsibilities and explaining the necessity and great importance of the measures being implemented.

It is difficult to overestimate the role played by trade union organizations in strengthening civil defence. Soviet trade unions are a great force in our society. This largest of the mass public organizations of the toilers numbers over 80 million individuals in its ranks. The trade unions, guided by the party, organize the country's working masses to fulfill national economic plans and perform major-educational work. They, in V. I. Lenin's words, must be the closest collaborators of state power. Beginning with the branch central committees and terminating with the factory-plant committees, the trade unions have adequate forces, means, and opportunities to participate in civil defence measures, to help passive defence staffs and services in training the population in the methods of protecting themselves and material values against mass destruction weapons. . . ."

"A great role in solving civil defence problems is played by the komsomol (communist league), which has a membership of 23 million. . . ."

"And today the komsomolite activists (members) head civil defence teams, detachments, and volunteer squads, march in the front ranks of its active soldiers.

At many enterprises and on collective and state farms, komsomol organizations are keeping an eye on the situation with respect to training youth in measures to protect themselves and material values against mass-destruction weapons, discussing these problems at committee sessions and at komsomol gatherings, and organizing lectures, reports, military games, and marches for youth.

The concrete forms and methods of work by komsomol organizations directed at involving komsomolites and young people in the study of the means of protection against mass destruction weapons and of other measures are determined by the *CC VLKSM*. Implementing them, the komsomol organizations render great assistance to the staffs, services, and heads of national economic objects.

DOSAAF (All union voluntary society for assistance to the army, air force and navy) organizations also have specific civil defence tasks. They are required to assist actively the civil defence organs in training the population in protecting themselves and material values against mass destruction weapons, to participate in verbal and visual propaganda, to furnish available training property for the training of students, blue- and white-collar workers, and collective farmers, and to render assistance in the matter of setting up civil defence exhibits in the localities . . ."

"The assistance of the volunteer defence society is most tangible wherever its organizations maintain business-like contacts with civil defence staffs, wherever measures directed at strengthening civil defence are jointly mapped out and implemented.

The organizations of the Red-Cross and Red-Crescent Society also actively participate in measures directed at training the population to protect themselves and material values against mass destruction weapons and at establishing medical formations. . . ."

"The training of the Soviet people in civil defence has now assumed enormous state significance. It has become a vital problem of the day. This is also understandable. We are living in a time when the imperialist states are using the achievements of science and technology not for improving the life of human society but for devising evermore powerful means to destroy people and material and cultural values. Imperialism is intensely preparing itself to unleash a rocket-nuclear war against the Soviet Union and other socialist states.

Under these conditions every individual, whatever the position he holds in the socialist state, is obligated to be prepared for civil defence. . . ."

"If an aggressor manages to unleash a war, it will demand of the leader right from the start an enormous, strenuous effort, energy, will, and bravery in making substantiated decisions. He will have to orient himself correctly in a complicated situation, know how to guide the collective of people and production activity, maintain order and organization both under conditions of the threat of an enemy's attack and in the period of the application of the mass destruction weapon and the liquidation of its aftermath.

It is readily obvious that without good training and solid knowledge it is impossible to make correct decisions under the complex conditions of a combat situation, give clear-cut orders and see to their implementation. That is why it is very important that the entire management group of enterprises, establishments, and state farms know well the principles of protecting the population against mass destruction weapons. The manager must have command of the art of guiding a large mass of people in carrying out rescue and emergency repair work. He is assisted to this end by course studies and studies in civil-defence schools, independent work

with training materials, various kinds of civil defence training exercises carried out under conditions approximating real ones. Well-prepared training exercises constitute a great school enabling theoretical knowledge to be strengthened, the necessary skills to be acquired in practice sessions involving the carrying out of civil defence tasks. . . ."

"So that every detachment (team, group) may carry out its mission, its personnel must study well the contaminating properties of modern weapons and the measures to guard against them; study well places for the deployment of shelters and the procedure for their filling, the civil defence signals and the regulations governing actions in response to them; and know how to use individual and collective protective means.

Formations will have to do a large amount of rescue work in the foci of strikes. To learn quickly and competently how to conduct reconnaissance and evaluate a situation in areas of rescue operations, to remove the injured from under ruins, to provide them with first aid—all these are also very necessary in the training of formation commanders and other members.

At factories and plants, on collective and state farms, and in establishments many blue- and white-collar workers and collective farmers are members of special-purpose civil defence formations: reconnaissance, communications, medical, fire, emergency-technical, transport, animal and plant protection, etc. Every such detachment, team, or group is designated to carry out a specific mission. For example, reconnaissance detachments or teams or groups are designated to reconnoiter in the foci of strikes, fire detachments, etc., to struggle against fires, medical detachments, etc., to render first aid to the injured, etc. The personnel of special-designation formations are obligated to have skills enabling them to carry out their special assignments. . . ."

"The personnel of rural formations must be trained to protect the population, animals, plants, foodstuffs, and fodder on their own kolkhoz (Collective farms), sovkhoz (State farms), as well as to carry out rescue operations in the foci of mass destruction.

Training the population in the methods of protection against mass destruction weapons is a universal and obligatory measure. Hence not only the citizens enrolled in formations but literally the entire population must study. Now every individual must know about mass destruction weapons, the methods and means to protect himself and material values against them. All the people must learn how to act in response to civil defence signals and, in case of evacuation, know places for the deployment of shelters. They must also learn, when necessary, how to build and equip them, how to use correctly the individual means of defence (gas mask, respirator, suit, etc.). It is very important that every individual learn how to help himself (self-help) and his comrade or near one (reciprocal help). For in a real situation people may require assistance and medical personnel may be unavailable. . . ."

"The training of the population in the methods of protection against mass destruction methods will achieve its goal if it is carried out in an organized manner. Here everything depends on the civil defence chiefs of urban areas and of rayons, on their staffs, and the heads of enterprises, establishments, collective and state farms. These individuals are obligated to their utmost so that the obligatory training of the population in all civil defence matters will meet requirements. However, the people themselves must be permeated with a feeling of responsibility for their own self education in civil defence, conscientiously related to this matter. It is always necessary to remember that lack of training in protective measures against mass destruction weapons may result in additional victims.

It is difficult to overestimate the significance of training school children in civil defence matters. What is important here is to teach the children how to act in case of an enemy's mass attack, how to use the collective and individual means of protection, and to learn the methods and means connected with self-help and mutual help. Such knowledge is necessary to all school children, beginning with those in the first grades. Incidentally, the experience of the Great Patriotic War also attests to this. At that time a government decision ordered the training of 8-year olds. It is quite obvious that, in school, training in civil defence matters entails observing a certain sequence, having the pupils accumulate knowledge gradually, as they move from class to class.

Students will acquire a more profound knowledge of civil defence in the upper classes of general education schools; their training is stipulated by the law "On Universal Military Service. . . ."

"In the Soviet Union, upon graduation grom general education schools, many boys and girls enter higher educational institutions (VUZ). Becoming students, they must prepare themselves to carry out the obligations of command personnel of formations in the services and national economic objects, to solve problems connected with the steady operation of the enterprises of industrial, transportation, communications, power, and agricultural production. This obligates students to study civil defence in general, with due regard to the specialty they are acquiring in the VUZ. For example, in technical institutes a future engineer must know to perfection what measures must be implemented to ensure the steady operation, e.g., of a plant, upon the application of mass destruction weapons. And not only to know about measures. It is far more important to know how to implement them. He must also learn how to organize rescue work at national economic objects in case of attacks on them, how to direct subordinates in doing such work. . . ."

"Solid knowledge of the means and methods of protection against mass destruction weapons is now required of students of special educational institutions and vocational schools. In these schools the students are trained to operate in the staff of specialized civil defence formations. Because of this, they must know about the

(*Continued on page 24*) **CIVIL DEFENCE**

SHOP CIVIL DEFENCE EXERCISE

By
Major General S. Kuzovatkin
Moscow, Voyennyye Znaniya, (Military Journal)

Shop exercises are now alloted considerable significance in the combat training of civil defence forces in national economic establishments. This is a comparatively new undertaking and little experience has been accumulated. That is why the civil defence headquarters of Moscow considered it necessary to carry out a demonstration exercise at the projector plant on the theme "Operations of a Shop Rescue Detachment During the Conduct of Rescue and Emergency Repair Work in an Area Stricken by a Nuclear Weapon."

Chiefs of staff of the city districts and national economic establishments were assembled at the exercise.

The exercise included the participation of the rescue detachment created on the basis of a shop. It was reinforced by two shelter servicing teams, sanitary teams, departments of militarized fire protection, a volunteer fire-fighting team, and an emergency technical and decontamination teams. The equipment consisted of a bulldozer, two excavators, a truck-mounted crane, a dump truck, autogenous units, a ZIF-55 compressor station, a first-aid bus, and vehicles—a field shower unit and vehicles for transporting the personnel.

The tactical concept stipulated a combination of emergency repair work with the performance of individual repair, household, and cleaning operations on the territory, along utility lines, and in the shops.

The exercise lasted five hours. The following training missions were carried out. Personnel of the rescue detachment and the reinforcement podrazdeleniya (subunit) were to improve the experience of command personnel in the organization of rescue and emergency repair work, and in the management of units. Personnel of the units were to be trained in operations within the area hit by a nuclear weapon.

The civil defence chiefs of staff of the city districts and establishments were to observe a demonstration of the organization and method of conducting shop exercises, and promote the elaboration of a unanimous view on this question.

Training time was broken down as follows: (1) Checking of the readiness of the units for the performance of rescue and emergency repair operations in the stricken area—30 minutes. (2) Issuance of missions by the commander of the rescue detachment to commanders of his and attached podrazdeleniya involving the introduction and operations of units in the stricken area—30 minutes. (3) The conduct of rescue and emergency repair operations and management of the units in the area stricken by a nuclear weapon—3 hours. (4) Analysis of the exercise— 1 hour.

Let us briefly describe the exercise.

After the enemy delivered a "nuclear strike" the rescue detachment moved out of the suburban zone up to its plant. On approaching it the enterprise civil defence director, after receiving information from reconnaissance ordered the detachment commander to carry out rescue and emergency repair operations. Upon entry into the stricken area the rescue detachment was preceded by a decontamination team, inasmuch as the territory of the enterprise was subjected to heavy radioactive contamination (from 8 to 17 roentgens).

After entering the stricken area the rescue detachment, with the aid of the attached special podrazdeleniya, began pumping air into caved in shelters with damaged filtering and ventilation systems, and then excavated them. The fighting men rescued people from the upper stories of burning buildings and administered first aid to the injured. The fires were localized and extinguished. Passages were cleared through the rubble. Damage to the power, water, gas, and steam lines were also repaired.

Under conditions of heavy radioactive contamination the personnel worked in their gas masks. The combination of emergency repair operations with housekeeping measures made it possible to eliminate actual defects in the power and water supply systems. In addition to that a part of construction trash was collected and moved out along with unwanted industrial byproducts.

Let us cite several examples which give a graphic picture of the exercise.

Reconnaissance reported that it succeeded in establishing contact with people in the shelter (the entrance into it and the air vent were blocked). Some 150 persons were in a serious situation.

The commander of the rescue team was ordered to immediately pump air into the shelter, while maintaining stable contact by all possible means with those in the shelter, advising them that help is on hand, and finding out how many injured there were and what they need. Then decisive measures were to be taken to open up the shelter and ensure the evacuation of the people.

During the operation the commander of the rescue team determined a method of excavating the caved in shelter and pumping air into it. He ordered that an opening be made in the roof and the blocked emergency exit be cleared. In addition to digging tools use was also made of the truck-mounted and the compressor station. The air was pumped in and the shelter was excavated, the people were rescued with the injured given first aid and evacuated to the temporary point for the collection of injured.

Reconnaissance reported by radio to the commander of the rescue detachment that an underground electric power cable was damaged in the vicinity of the shop. There was not enough time, materials or manpower for the erection of aerial lines. It was necessary to dig up the cable at the point where it was damaged and repair it.

Commander of the rescue detachment ordered the commander of the emergency-technical team to carry out this operation. The power was first turned off in the power lines. Finding the point of breakage in the underground power cable with the aid of a special instrument, the commander of the emergency-technical team ordered that the cable be dug up with digging tools and the damage repaired, which was done.

Commander of the second rescue team reported to the commander of the rescue detachment that there was no water in the hydrants in the vicinity of the burning shop. A report arrived at the same time indicating that water was leaking to the surface in the vicinity of the pumping station.

The commander of the rescue detachment ordered the commander of the emergency-technical team to immediately carry out repair work in order to ensure the uninterrupted supply of water for the fire fighting units, after determining the reasons for the stoppage of the water supply to the shop and flooding of the territory around the pumping station.

The commander of the emergency-technical team personally reconnoitered the area and the reasons for damage to the water supply system and using the forces of his podrazdeleniye localized the damage. The slide gates in the manholes were closed on both sides of the damaged section of the water line, after which water supply was restored by the installation of a temporary water line on the surface.

The detachment carried out other rescue and emergency repair measures in the area stricken by a nuclear weapon.

Preliminary preparations for the exercise ensured its normal conduct. The city headquarters, with the participation of the plant civil defence chief and his staff, worked out a calendar plan of preparations, organizational-methodological instructions, a plant order, the tactical concept, assignments for the trainees, and plans for the conduct of the exercise and the simulations.

Almost all that was planned was, on the whole, carried out. In order to have the rescue and emergency repair operations to be carried out in a situation close to reality, the chief mechanic, the chief power engineer, and the chief of the department of capital construction, as well as the chief of the plant fire fighting service created appropriate operational areas permitting a combination of the operations in them with the performance of a number of plant household measures.

Commanders of participating units additionally studied with the personnel the rules governing action under a threat of an enemy attack and in response to civil defence signals, as well as requirements pertaining to the conduct of rescue and emergency repair operations with the observance of safety measures in the stricken area, and the order in which individual protective equipment is to be used.

Group exercises with unit commanders were carried out and two days before the exercise it was fully rehearsed. Umpires, simulators, and extras were prepared.

The personnel of the rescue detachment and the units attached to it functioned properly at the exercise and displayed initiative. This was the consequence of the fact that the combat training of units, and the training of all workers and employees is organized well at the plant, and in that shop in particular. The units are well-staffed, cohesive, and equipped with equipment and other property.

The party plant committee took an active part in the preparation and conduct of the demonstration shop exercise. A plan of party political work was compiled, a conference of secretaries and party group organizers was conducted along with meetings of party groups, and a party meeting in the shop. Local radio broadcasts and newspapers reported the preparations for the exercise as well as its progress.

What principal conclusions follow from the demonstration shop exercise that was held?

Exercises conducted by shop units as one of the forms of combat training of civil defence forces in national economic establishments justify themselves and are most useful

We consider that shop units (rescue detachment, rescue team) with which the exercises are held should be supported by special podrazdeleniya. It is necessary to plan shop exercises and the participation of special units in them so that each shop and special unit would conduct two exercises in the course of a year with emphasis on the organization and elaboration of questions concerning cooperation.

In our opinion exercises of rescue units should not be conducted separately from the special units. Such exercises will produce lesser results. In addition to that a number of inevitable difficulties arise in the fulfillment of rescue and emergency repair operations.

Inasmuch as every shop must conduct two exercises in the course of a year, during the first exercise it is advisable to work out questions stipulated in the establishment civil defense plan before the start of rescue and emergency repair operations. The second exercise should be fully devoted to these operations.

It is important to create a sufficiently complicated tactical situation at every exercise, which will help to train the units in operations under conditions close to reality.

The material and technical backup of shop exercises requires a lot of attention▲

SOVIET C.D. BETTER THAN U.S. C.D.?

by
*Joanne Levey Gailar**
(Abridged)

Soviet Program Growing; American Program Shrinking

When I speak to various groups on Soviet civil defense, a question that repeatedly comes up is this one: If someone so desired, could he not make just as good a case for the extensiveness of the U.S. civil defense effort as you have made for the Soviet one? This question is asked invariably by reflective, intelligent members of the audience, those who want to be sure that I have not been oversold on the earnestness of the Soviet civil defense effort by the Soviet material I have read.

I freely acknowledge that in the event of nuclear war, no one can give an ironclad guarantee that the Soviet program to protect their essential industrial workers in urban blast shelters and to evacuate everybody else to the surrounding countryside and provide fallout protection for them will work. I can attest, however, both to the earnestness and the intensity of the Soviet effort to instruct their entire population in the means and methods of defense against nuclear weapons, compared with a very low-key American program. The Soviet program appears to be growing in strength and effectiveness, while the American program is shrinking.

Instruction of Soviet Population — Nationwide, Compulsory, Directed

Numerous articles, for example, on the civil defense instruction of school children in grades five, six, seven and nine leave no doubt that the Soviet school children in all fifteen republics of the Soviet Union are being taught to protect themselves. Details about the 1968-1969 curriculum which include important changes in method and content of courses taught in the previous year, letters of suggestion and criticism from parents and teachers, and descriptions of equipment (gas masks, first-aid kits) and teaching materials (manuals, handbooks, posters, film strips) supplied to the schools, all point to the fact that Russian school children indeed receive a thorough training in civil defense.

Nor is it school children alone who are instructed in civil defense. Marshal V. I. Chuykov, U.S.S.R. Chief of Civil Defense, when outlining the 1969 civil defense program in an interview, stated, "It is pertinent that this year the task of training the population in the 21-hour program is to be completed." And as Joseph Romm, the then Director of Civil Defense, testified at a recent hearing, "They (the Soviets) have a tremendous civil defense training program. Their society is different. They can direct people to be trained. There is *no question* that over 100 million people have taken their *intensive* civil defense training course. They are now, I think, in their sixth *mandatory* training cycle."

Instruction of U.S. School Children — Spotty, Voluntary, Undirected

On the other hand, I know of no similar nationwide program in the U.S. for instructing our own population. While the national Office of Civil Defense has provided training for instructors of adult education courses and has developed with the Public Health Services a medical self-help training course, these courses have been adopted in what Mr. Romm describes as "spotty fashion" at the junior high school and high school levels. Under a training program like ours, which in Mr. Romm's words is "voluntary . . . not directed," only a very small fraction of our populace, either in school or out of school, is learning about civil defense. In fact, few of us know of any children who have received any civil defense training.

Direction of Soviet Public Attention Toward Civil Defence

Similarly, the attention of the Soviet public is continuously directed toward civil defense through all the press media—newspapers, magazines, movies, radio and television, while the attention of the U.S. citizens is rarely called to civil defense matters through any press medium whatsoever. A Soviet article informs us, for example, "It is very pleasant to note that in recent times materials on this subject (civil defense) have been published in all the central newspapers, and also in the magazines 'Kommunist,' 'Sovety deputatov trudyashchikhsya,' 'Sovetskye profsoyuzy,' 'Ogonek,' 'Nauka i Zhizn,' and others." Another Soviet source indicates that "more than a thousand persons have participated and are participating in (providing) television broadcasts in all studios."

*A recognized authority on Soviet Civil Defense uses her in-depth study of today's Soviet popular and technical publications to argue that civil defense trends in the Soviet Union and in the United States are divergent, "the former up, the latter down." Research was sponsored by the United States Atomic Energy Commission under contract with the Union Carbide Corporation. It was published in full in "Survive",—an American Journal of Civil Defence—under the title: "Is the Soviet Civil Defense Program Better than Ours".

But sceptics need not take the word of the Russian sources. U.S. resident reporters in Moscow from two of our most distinguished newspapers verify the outflow of articles on civil defense in the Russian press. Bernard Gwertzman of the New York *Times* reports: "The article (on large-scale civil defense preparations in the Soviet republic of Kazakhstan) in *Pravda*, the Communist party newspaper, was the latest of a series in recent years stressing the importance of civil defense." And Charlotte Saikowski of the *Christian Science Monitor* attests, "A drive to bolster public awareness of civil defense is under way here. The Soviet press recently has carried a number of articles about air-raid drills in factories, training exercises on farms, and other measures designed to prepare Russians in the event of nuclear war . . . Movie houses show special films and veterans of World War II give lectures on the subject (of civil defense)." According to Miss Saikowski, "Justification for this heightened attention to civil defense is the allegedly growing threat of the 'forces of imperialism' and attempts of the West to undermine the Communist camp."

Attention of U.S. Populace Directed away from Civil Defence

On the other hand, when Dr. Eugene Wigner, U.S. Nobel laureate, submitted an article on civil defense to the New York *Times*, it was politely received but never printed. A similar effort to interest the *Reader's Digest* in reprinting an article on Soviet civil defense was turned down with comments implying that the subject of civil defense was of little interest. That these are not isolated cases is substantiated by a review of the *Readers' Guide to Periodical Literature* for the past three years. *Readers' Guide* of March 1966 to February 1967 contained seven articles on "Civil Defense"; *Readers' Guide*, March 1967 to February 1968, but two articles, one of which was on Russian civil defense; and *Readers' Guide*, March 1968 to February 1969, *not a single article* on civil defense, U.S. or otherwise. Thus, in the same years that Soviet periodicals and newspapers stepped up the number of articles on civil defense, American articles in periodicals and newspapers have decreased to zero. I recently questioned ten people at random; like me, none had seen a program or even a spot announcement having to do with American civil defense on television for several years.

Party and Government Mandate Strengthens Soviet Civil Defence; Evacuation Plans Consolidated

The increase in articles on civil defense in the Soviet Union can be viewed legitimately as a reflection of government and party concern. Soviet civil defense was given a major boost in 1966 at the Twenty-third Party Congress when the Central Committee of the Communist Party called for strengthening civil defense. The Soviet government gave legislative teeth to this mandate with the Law on Universal Military Obligation, article seventeen of which calls for compulsory civil defense training in the grade schools, high schools, and technical schools throughout the Soviet Union.

Another result of the party and government mandate was to substantially consolidate and strengthen existing plans for pre-attack evacuation and dispersal of large segments of the civilian population during periods of crisis escalation. V. I. Chuykov, Soviet Chief of Civil Defense; O. V. Tolstikov, former Soviet Chief of Civil Defense; and Lt. Gen. D. Shuvyrin, First Deputy Chief of Soviet Civil Defense, have all recently emphasized that urban pre-attack evacuation is an extremely effective measure in saving lives. Shuvyrin, in describing evacuation as "the most radical means of defense," indicates that through evacuation, "it is possible to achieve a reduction in the population density by scores of times in the large cities." In addition, he points out that the feasibility of evacuation is enhanced in the Soviet Union (1) by the socialist system and the planed economy, which enables the S.U. to organize and carry out evacuation on a nationwide scale; (2) by the vast expanse of the motherland, the great capacity of the surburban area, which permits the settling of an enormous quantity of individuals in rural localities, and (3) by a well-controlled transport, which can move people out of cities in a short period of time. Marshal Chuykov, in an article appearing in *Science and Life*, a widely distributed and highly regarded Soviet magazine, makes the same claims for the feasibility of evacuation as Shuvyrin, stressing that in the light of its effectiveness, supplying people with food and water—not defending them from nuclear weapons—is the really knotty problem.

That the Soviets take evacuation seriously is also evident in the comprehensiveness and detail of their program. Every town, for example, has an evacuation transport commission, which is headed by the deputy chairman of the local Council of Workers' Deputies, whose responsibility is to coordinate the evacuation of the population by rail, motor and water.

Elaborate evacuation plans include the designation of collecting points at which the evacuees would assemble; evacuation passes for every man, woman and child; the presence of a doctor or nurse with every evacuation train or convoy of trucks; explicit instructions on what every family should take (depending on climate and season) and the maximum weight of luggage and contents. There are also plans for receiving the evacuees in the country—providing them with food, water, and jobs, and even for having their mail delivered to them at their new addresses. Thus, the seriousness with which the Soviets take evacuation is evident in (1) the declarations of their military strategists of its effectiveness, (2) the existence of civil defense evacuation commissions in every town and village, and (3) the comprehensive and detailed plans for carrying it out.

Decreasing Budget Allocations Weaken U.S. Civil Defence

I have suggested that the increase in articles on civil defense in the Soviet press is a reflection of government and party concern. By the same token, it is likely that press apathy toward civil defense in the U.S. is a reflection of government apathy, which is evident in decreasing budget outlays for civil defense. While the U.S. government authorized $238.9 million for civil defense in 1962, only $105.1 million, less than half the 1962 allocation, was authorized for 1966, the year that the Communist Party in the Soviet Union issued its mandate to strengthen civil defense. And the allocation for civil defense for 1969 was $68.1 million, the lowest* authorized federal expenditure for civil defense in the past eight years.

Present policy of attempting to provide fallout protection for people near their homes and places of work has prevailed since 1958 when the Federal Civil Defense Administration (FCDA) declared that national civil defense policy "which now includes planning for the movement of people from target areas if time permits, will now also include the use of shelter to provide protection from radioactive fallout." In the same release the FCDA cast serious doubt on the effectiveness of blast shelters when they stated, "There is no assurance that even the deepest shelter would give protection to a sufficient number of people to justify the cost." While the wording of the 1958 FCDA release seems to give equal billing to evacuation and fallout protection, in practice national policy since that time has placed almost exclusive emphasis on fallout protection with virtually no consideration of evacuation. Nor has any effort been made to provide blast protection for the population.

In citing the absence of a workable evacuation plan in the U.S., I am not suggesting that we should inaugurate such a plan ourselves. On the contrary, a federal order to evacuate our population during a period of crisis could very well serve to escalate the crisis rather than diminish it. Also, as the Soviets themselves recognize, an evacuation policy has a greater chance of success in the U.S.S.R. where there is a well established tradition of public obedience to the directives of a strong central government *and a distinct separation of cities (in contrast to the megalopolises of the U.S.).* And, finally, as the Soviets again correctly surmise, they could evacuate their population with reasonable confidence that we would not attack them unless we were ourselves attacked. Thus, I am not criticizing the U.S. for de-emphasizing evacuation as a civil defense policy. I simply want to point out that successful evacuation of Soviet cities during a period of escalating international crisis could give the U.S.S.R. a decided strategic advantage over us. It would degrade our deterrence capability, take the teeth out of McNamara's policy of assured destruction, and offset the strategic balance by substantially reducing the number of Soviet urban casualties in a countervalue attack. However, the only answer today to a successful Soviet evacuation might be a return to our pre-1958 evacuation policy, even with all the inefficiency and confusion an actual evacuation would entail.

Soviets Recognize Need for Blast Protection

The Soviet Union, unlike the U.S., provides compulsory and nationwide civil defense instruction for its population. But the differences between the two programs do not end here: there is also an essential difference in philosophy over the importance of blast protection. The Soviets recognize the need for affording protection from the blast effects of nuclear weapons to people in cities and have provided such protection in all cities with subways. The Moscow subway system, for example, extends for over seventy-five miles and has more than eighty stations. U.S. visitors to the Soviet Union have attested to the depth of this subway and to the presence of both heavy blast doors in the stations and high-speed escalators, which convey passengers down into them. Nor is Moscow the only city with subways equipped with blast doors. Again U.S. visitors have observed similar protective facilities in both Leningrad and Kiev. Baki and Tbilisi also have subways, and new ones are being established in Tashkent and Kharkov. That all seven systems are designed for blast protection is substantiated by a recent Russian television scenario on "Reliable Means of Protection." This scenario, which includes shots from a film of a subway, has the accompanying script: "These structures can protect a person from blast waves, light radiation and radioactive contamination. Here you see the subway. In cities which have one the residents will always find protection in it."

Protection in U.S. Limited to Fallout

Meanwhile, since 1958, the policy of the U.S. has been to focus exclusively on fallout protection. Thus, there has been no emphasis even on using preferentially those fallout shelters that afford some measure of blast protection. This policy has led, for example, to the identification of 10 million fallout shelter spaces in Manhattan (much more than the peak population of the island) with no preferential selection of those shelters for public use which might offer protection from blast as well as fallout.

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*Decreases in civil defense allocations admittedly reflect budgetary cuts to offset expenditures incurred by the Vietnam War. However, even when allowing for the higher priority of military requirements in Southeast Asia, the wisdom of so severely curtailing our civil defense program seems questionable. Joseph Romm has testified before the House of Representatives as follows:

> "Last year I emphasized that the FY 1969 budget estimate of $77.3 million was the minimum sustaining level for the national civil defense effort. The FY 1969 appropriation was $61 million, or 21% less than the sustaining budget and 29% less than the FY 1968 appropriation. As a result, essential parts of the FY 1969 program have had to be severely curtailed and some elements deferred."

Soviets Stress Fallout Protection in Rural Areas

While the Soviets recognize the need for blast protection in cities, they emphasize protection against fallout in the country. Thus, there are explicit manuals with retailed instructions both on erecting hasty shelters out of materials at hand and on converting vegetable bins, cellars and basements and silage pits to fallout shelters. Village dwellers are given blueprints and alloted bricks for strengthening these facilities. Since the centerpiece of the Soviet civil defense program is to evacuate all nonessential urban dwellers to rural areas, it is hardly surprising that they stress increasing the fallout facilities in the country.

U.S. Discontinues Rural Shelter Development Program

Meanwhile, the U.S. Office of Civil Defense, which appropriated funds to four agricultural engineers for the past year and a half for a minimal "Rural Shelter Development Program," brought this program to a close on December 31, 1969.

Summary: Yes the Soviet Civil Defence Program is Indeed Much Better Than Ours

Coming back to our original question—Is the Soviet civil defense really better than ours? we have no choice but to answer in the affirmative. That the Soviets take civil defense more seriously than we do and are instituting it much more effectively than we are is evident in these facts which we have considered:

- Instruction of Soviet school children is nationwide, compulsory and directed; instruction of U.S. school children is spotty, voluntary, undirected.
- Direction of public attention toward civil defense in the Soviet Union is apparent in the increased use of all press media for civil defense purposes over the past three years; direction of public attention away from civil defense in the U.S. is apparent in the virtual disappearance of any mention of civil defense from all news media during the same period.
- Party and government have issued mandates for strengthening civil defense in the past three years and have funded a greatly extended program, of which one aspect alone, public instruction, has cost about $2 billion; U.S. government has decreased total appropriations for civil defense from $105.1 million to $68.1 million over the same period of time, its eight-year total for civil defense allocations coming to less than the Soviet expenditure for instructing their population.
- Soviet policy is to recognize the need for blast protection and to provide it, for example, in seven urban subway systems; U.S. policy is to focus exclusively on fallout protection with no provision for preferential use of shelters which offer some degree of blast protection.
- Soviets stress fallout protection in rural areas and provide free blueprints and materials to farmers and villagers; the U.S. brought its extremely small Rural Shelter Development Program to a close at the end of 1969.▲

CIVIL DEFENCE (*Continued from page 18*)

contaminating properties of nuclear, chemical, and bacteriological weapons, collective and individual protection means, and the regulations governing their use. They must also know the methods of rendering self-help and mutual help in the foci of attacks, the procedure for effecting the medical processing of people and decontaminating territory, clothes, footwear, etc. . . ."

"Our radio and television are required to make an important and beneficial effort in propagating information on the means and methods of protection against mass destruction weapons. The broadcasts of central and local radio and television on urgent problems connected with protection against mass destruction weapons, the showing of motion picture films, the organization of meetings with those who have distinguished themselves in civil defence, the popularization of the advanced experience in the implementation of civil defence measures—all these constitute a significant contribution to the further strengthening of civil defence.

In training the Soviet people in protective measures against mass destruction weapons, the publication of mass literature and training and visual aid is not ranked the least important. Good books, brochures, posters, and slides are our true assistants. They enable us to understand more thoroughly the nature of modern war, the aggressive essence of imperialism, the methods and means of protection against mass destruction weapons...."

"They organizations of the "Znaniye" (knowledge) Society is also making a pretty good effort along this line. Their numerous lecturer aktiv (active) informs the population about protection against mass destruction weapons. Lectures and reports on civil defence are delivered by the employees of staffs and services, by scientists, engineers, physicians, teachers, zootechnicians, agronomists, and other specialists. Along with lectures, the organizations of the "Znaniye" Society prepare methodological literature to aid the lecturer, implement various mass measures.

The propaganda of the knowledge on civil defence is an integral part of the effort made in our country to educate the toilers, especially the young ones, in a militant-patriotic spirit. It must contribute to heightening the morale of the Soviet people and improving their psychological preparation, to instilling into them a solid confidence in the effectiveness of civil defence measures. . . ."▲

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